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Posttraumatic Stress Disorder and Memory

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Trauma, by definition, is the result of exposure to an inescapably stressful event that overwhelms a person's coping mechanisms. Since it would be immoral to expose laboratory subjects to the sort of overwhelming stimuli that give rise to the dissociated sensory reexperiences characteristic of posttraumatic stress disorder (PTSD), we are uncertain to what degree the vast literature involving laboratory studies of less stressful events is relevant to understanding how people process traumatic memories.

Relying on clinical observations, it has been recognized for more than a century that "when people become too upset by their emotions, memories cannot be transformed into a neutral narrative" (Janet 1919). The ensuing terror "results in a phobia of the memory that prevents the integration (synthesis) of the traumatic events and splits the traumatic memories from ordinary consciousness," leaving them to be organized as visual perceptions, somatic preoccupations and behavioral reenactments (Janet 1894).

The dissociative nature of traumatic memories seems to be what distinguishes them from memories of everyday experience: dissociation at the moment of the trauma now has been established as the single most important predictor for developing PTSD (Marmar and others; Shalev and colleagues). The flashbacks and nightmares characteristic of PTSD can be seen as products of that dissociation. Dissociation means that emotional, sensory, cognitive and behavioral aspects of the traumatic experience are not integrated. For example, traumatized people may know what has happened to them, but they may have no feelings about it. Conversely, people may act disturbed without knowing what makes them behave that way. The British psychiatrist C.S. Meyers, who in 1915 coined the term shell shock, described soldiers' reactions to trauma during World War I as follows: "The normal personality [is] replaced by an 'emotional' personality. Gradually or suddenly an 'apparently normal' personality returns-normal, save for the lack of all memory of the [traumatic] events, normal, save for the manifestation of somatic, hysteric disorders indicative of mental dissociation."

He suggested that treatment of shell shock should "deprive the 'emotional personality' of its pathological, distracted, uncontrolled character, and effect...its union with the 'apparently normal' personality hitherto ignorant of the emotional experiences in question" (Meyers 1920). The extensive literature from World War I documents how many shell-shocked soldiers became amnestic for their traumas, which were later relived as nightmares, flashbacks and behavioral reenactments. E.E.

Southard's Shellshock and Neuropsychiatry (1919) alone has 23 such detailed case reports.

The clinical accounts of trauma cases by Janet (1893), W.H.R. Rivers (1918), Kardiner (1941), Lenore Terr (1994) and myself (e.g., van der Kolk 1984, 1987) illustrate the ways in which traumatized individuals remember. During the past half-century psychiatrists and psychologists have largely abandoned detailed case descriptions in favor of enumerating the relationships between certain symptoms and any number of other variables. This method allows for findings that can be replicated by other scientists in studies of similar design, but it tends to lose some of the richness of the subjective human experience.

An Immediate Past

Ordinarily, memories of particular events are remembered as stories that change and deteriorate over time and that do not evoke intense emotions and sensations. In contrast, in PTSD the past is relived with an immediate sensory and emotional intensity that makes victims feel as if the event were occurring all over again. The longitudinal study of the psychological and physical health of 200 Harvard undergraduates who participated in World War II is a good illustration of how adults process traumatic events (Lee and cohorts). When these men were reinterviewed about their experiences 45 years later, those who did not have PTSD had considerably altered their original accounts: the most intense horror of the events had been bleached. In contrast, time had not modified the memories of those who had developed PTSD, who recalled their experiences with extreme vividness. Thus, paradoxically, the ability to transform memory is the norm, while the problem in PTSD is that the full brunt of an experience does not fade with time.

Accounts of the memories of traumatized patients consistently mention that emotional and perceptual elements tend to be as prominent as declarative components (van der Kolk and Fisler 1995). These patients see the event happening again-they hear it, smell it and have kinesthetic sensations. This dissociative nature of traumatic memory complicates the capacity to communicate about it. Research has shown that recall occurs in a state-dependent fashion; triggered by exposure to sensory or affective stimuli that match sensory or affective elements associated with the trauma. In some people the memories of trauma may have no verbal (explicit) component: the memory may be entirely organized on a perceptual level, without an accompanying narrative about what happened.

Recent symptom provocation neuroimaging studies of people with PTSD provide a neurobiological explanation for these clinical observations. During the provocation of traumatic memories there was decreased activation of Broca's area, the part of the CNS most involved in the translation of subjective experience into speech. Simultaneously, the areas in the right hemisphere that are thought to process intense emotions and visual images had significantly increased activation (Rauch and others). These observations have given rise to the notion that traumatic memories may be encoded differently than memories for ordinary events, probably because extreme emotional arousal interferes with interpretive and associative systems in the CNS (van der Kolk 1997).

The question of whether the sensory perceptions reported by people with PTSD are accurate representations of the sensory imprints at the time of the trauma is intriguing. Studies of flashbulb memories have shown that the relationship between emotionality, vividness and confidence is very complex, and does not necessarily reflect accuracy. Once sensations are transcribed into a personal narrative, they become subject to the laws that govern explicit memory: to become a socially communicable story that is subject to condensation, embellishment and contamination. Thus, while

trauma may leave indelible sensory and affective imprints, once these are incorporated into a personal narrative, this, like all explicit memory, is subject to varying degrees of distortion (Southwick and coworkers).

The *DSM-IV* recognizes that trauma can lead to extremes of retention and forgetting. Traumatized individuals often suffer from a combination of vivid recall for some elements of the trauma and amnesias for others. While the vivid intrusions of traumatic images and sensations are the most dramatic expressions of PTSD, the loss or absence of recollections for traumatic experiences is well-documented. This is specifically recognized in the DSM-IV as dissociative amnesia, "a reversible memory impairment in which memories of a personal experience cannot be retrieved in a verbal form."

Traumatic Amnesia

The issue of traumatic amnesia was first recognized by the founder of neurology, Jean Martin Charcot (1887), and has been frequently documented since. For example, after the evacuation from Dunkirk during World War II, Sargeant and Slater (1941) reported that 144 of 1,000 consecutive admissions to a field hospital were amnestic for the experience.

As long as men were found to suffer from delayed recall of exposure to terror under clearly identifiable circumstances, this issue was comfortably incorporated in the canon of the profession. However, when the same memory problems started to be documented in girls and women, some of whom started to seek justice against their alleged perpetrators, the issue became a highly emotional one and largely moved from the arena of science into journalism and the courtroom. There the adversarial process, with its polarized legal arguments, has promoted selective attention to one-sided arguments, rather than to the complexity of the issues involved.

The degree to which mainstream culture itself can ignore reality is illustrated by the fact that as recently as 1982, the Veterans Affairs Department rejected a grant application because "it has not been shown that PTSD is relevant to the mission of the VA." Today, we know that over a million men who served in Vietnam still suffer from PTSD.

The 1980 edition of Friedman, Sadock and Kaplan's *Textbook of Psychiatry III* estimated that incest occurred in less than one out of a million women. In 1993 the U.S. Department of Health and Human Services estimated 217,700 new cases of child sexual abuse. Hence, the prevailing culture may be as vulnerable to distortions of reality as psychiatric patients themselves.

Amnesias for some or all aspects of the trauma have been documented following a wide variety of traumas: natural disasters and accidents, combat, kidnapping, torture and concentration camp experiences, and in victims of physical and sexual abuse (van der Kolk and colleagues 1996). A general population study by Elliot and Briere (van der Kolk and colleagues 1996) reported complete or partial traumatic amnesia after virtually every form of traumatic experience, with childhood sexual abuse, witnessing the murder of a family member and combat exposure yielding the highest rates. Having a history of being in psychotherapy did not affect the rate of delayed recall of traumatic experiences (about 15% overall). Traumatic amnesias tend to be age- and dose-related: the younger the age at the time of the trauma, and the more prolonged the traumatic event, the greater the likelihood of significant amnesia (*DSM-IV* Field Trials for PTSD).

Thus, there is ample documentation of the fact that dissociative amnesia occurs in some traumatized

adults. In recent years, however, doubts have been raised concerning the existence and reliability of recovered memories following childhood sexual abuse. This has fostered at least 12 prospective and retrospective studies of individuals who claim to have been sexually abused as children. All studies have found that a certain percentage of subjects suffered from total amnesia during some time in their lives (e.g., Loftus and coworkers).

The best available study on this subject was conducted by Linda Meyer Williams (1994, 1995) who reinterviewed a sample of 129 subjects who had been examined for documented sexual abuse experiences an average of 17 years before. Of these subjects, only 80 (62%) could recall the index sexual abuse. Even among the girls who had been between 7 and 15 years old at the time of the abuse, 30% reported no recall of the incident. Of the 62% of subjects who now remembered the index abuse, 16% reported having had total amnesia at some time in their lives. Memories of the subjects who reported total amnesia some time in the past were as accurate as those of the subjects who claimed they always remembered. However, the subjects who at some time had forgotten the abuse were more uncertain whether their memories were accurate or not (Williams 1995). The memories of all subjects in this study in essence reflected what had been documented 17 years before.

The official statement by the American Psychiatric Association on Memories of Sexual Abuse contains the following counsel, which we do well to heed: "It is not known how to distinguish, with complete accuracy, memories based on true events from those derived from other sources. Many individuals who have experienced sexual abuse have a history of not being believed by their parents, or others in whom they have put their trust. Expression of disbelief is likely to cause the patient further pain and decrease his/her willingness to seek needed psychiatric treatment. Similarly, clinicians should not exert pressure on patients to believe in events that may not have occurred, or to prematurely disrupt important relationships... Specialized knowledge and experience are necessary to properly evaluate and/or treat patients who report the emergence of memories."

For the past century-and-a-half, psychiatry as a profession has mirrored the intrusions, confusion and disbelief of our traumatized patients by periodically forgetting well-established knowledge about trauma, and ascribing the psychological impact of overwhelming experiences to constitutional or intrapsychic factors alone. From time to time, our profession gets fascinated by trauma, after which the pendulum swings in the direction of entirely disbelieving the relevance of our patients' stories.

Given the complexities of how people remember trauma, the issue of PTSD and memory should be approached with careful observation, attention to the facts, and compassion for the victims. Trauma invites people to assign blame, and to divide the world into simple paradigms of true and false, good and evil. This polarization has always colored our approach to victims, much to the detriment of our ability to help them overcome the effects of their traumatic experiences.

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